CLAIMS

What is claimed is:

1. A method for color mixing with arc stability and straightening of a high intensity discharge (HID) lamp:

(a) driving the HID lamp with a half bridge configured resonant inverter at a high frequency which is swept over a high frequency range to effectuate arc stability and arc straightening; and,

(b) modulating a duty cycle of the half bridge configured resonant inverter to effectuate power modulation at a frequency power component substantially equal to a frequency of a second longitudinal acoustic mode of the HID lamp, which effectuates color mixing along a vertical axis of the HID lamp.

2. The method according to Claim 1, wherein the high frequency range is substantially 45kHz to 55kHz.

3. The method according to Claim 1, wherein step (b) includes modulating the duty cycle at a modulation frequency which is equal to substantially one-half of the frequency of the second longitudinal acoustic mode.

4. The method according to Claim 1, wherein step (b) includes modulating the duty cycle with a sinusoidal function.

5. The method according to Claim 1, wherein the frequency power component is substantially 24kHz and is independent of the high frequency driving the HID lamp.

6. The method according to Claim 1, wherein the duty cycle has a nominal value of 50% and varies symmetrically about the nominal value plus or minus 20%.

7. A method for color mixing with arc stability and straightening of a high intensity discharge (HID) lamp:

(a) driving the HID lamp with a half bridge configured resonant inverter at a high frequency which is swept over a high frequency range to effectuate arc stability and arc straightening;

(b) modulating a duty cycle of the half bridge configured resonant inverter with a function having a modulating frequency substantially equal to a one-half a frequency of a second longitudinal acoustic mode of the HID lamp; and,

(c) exciting the second longitudinal acoustic mode with the half bridge configured resonant inverter to effectuate color mixing along a vertical axis of the HID lamp.

8. The method according to Claim 7, wherein the high frequency range is substantially 45kHz to 55kHz with a nominal frequency of 50kHz.

9. The method according to Claim 7, wherein the step (b) effectuates power modulation at a frequency power component equal to substantially the second longitudinal acoustic mode.

10. The method according to Claim 9, wherein the frequency power component is substantially 24kHz and is independent of the high frequency driving the HID lamp.

11. The method of Claim 7, wherein the function is a sinusoidal function.

12. The method according to Claim 7, wherein the duty cycle has a nominal value of 50% and varies symmetrically about the nominal value plus or minus 20%.

13. A half bridge configured resonant inverter for powering a high

intensity lamp (HID) comprising:

a half bridge circuit driving the HID lamp at a nominal high frequency over a swept switching high frequency range to effectuate arc stability and arc straightening and having a modulated duty cycle to effectuate power modulation to the HID lamp at a frequency which excites a second longitudinal acoustic mode of the HID lamp to achieve color mixing or reduction in vertical segregation along a vertical axis of the HID lamp; and,

a resonant filter coupled between the half bridge circuit and the HID lamp.

14. The inverter according to Claim 13, wherein the modulated duty cycle has a modulation frequency which is equal to substantially one-half of a frequency of the second longitudinal acoustic mode.

15. The inverter according to Claim 13, wherein the nominal high frequency is approximately 50kHz and the high frequency range is substantially 45kHz to 55kHz.

16. The inverter according to Claim 13, wherein the modulated duty cycle is modulated with a sinusoidal function.

17. The inverter according to Claim 13, wherein the frequency of the

power modulation is substantially 24kHz and is independent of the nominal high frequency driving the HID lamp.